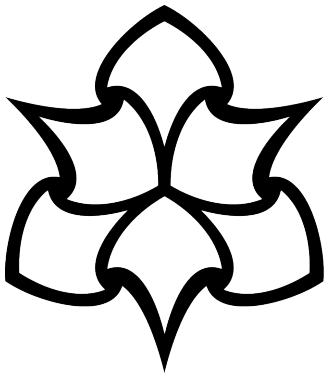

The Modern Lighthouse – A Sculpture by Accident

Steve Millington

> On the coast waves break and salt foam scatters and denudes, gales blow stronger and the rain is more searching … Buildings must be sturdy and close to the earth. (John Piper quoted in Spalding, 2009: 135)

This essay discusses the utilitarian qualities of the lighthouse, focusing on post-medieval lighthouse design, or what Hague and Christie (1975) describe as *secular lights*. John Smeaton's 18th century Eddystone lighthouse (1759) epitomises this more contemporary form, stripping away ecclesiastical symbols, cultural adornments and architectural indulgences to create a lighthouse marked by bold simplicity and functional design. Through the combination of innovative engineering, logical use of materials, and an emphasis on efficiency and economy, Smeaton (1724 - 1794) established the iconic lighthouse shape, typified by the wide circular base supporting a tall tapering tower. Through Smeaton, the lighthouse acquired architectural and functional qualities procreant of a modernist or the machine-age aesthetic. Considered both modern and a site of technological progress, the aesthetic qualities of the lighthouse have somehow slipped into a nostalgic realm of nautical gaiety or kitsch maritime heritage. This essay, therefore, re-examines the connection between lighthouse construction and the modernist aesthetic, and explores the other qualities associated with the lighthouse during the 20th century.

Unadorned functionalism: John Smeaton's Eddystone

In the most basic terms, a lighthouse is merely an architectural support for a lighting mechanism, which is its primary function. Drawing on the notion of constructive intelligence, Smeaton's utilitarian design was intended 'to mimic the shape of the English oak tree' in creaating a structure where sturdiness, longevity and reliability were paramount.

Smeaton's engineering rationality therefore draws upon numerous technological innovations to enable the lighthouse to withstand climatic and topographical contingencies. The broad cylindrical mass at the base dissipates the energy from wave impact, whilst the

taper encourages water to flow up the structure, absorbing the impact across a wider area of the granite exterior:

> At intervals of a minute and sometimes two or three; I suppose when a combination happens to produce one overgrown wave, it would strike the rock and the building conjointly, and fly up in a white column, enwrapping it like a sheet, rising at least to double the height of the house, and totally intercepting it from sight (Smeaton, 1814: 40).

Eddystone's exterior was coated in a new water-resistant cement, while the internal structure combined a complex system of dovetailing, marble dowels, joggles, plugs, and cemented stonework. Bolting the structure to various rock types and precipices called for multiple engineering solutions which generated a lexicography of functional terms: 'screwpile, skeleton, sparkplug, bottle, cupola, conical, cylindrical, square, pyramidal, hexagonal, octagonal, and integral' (Blake, 2007: 12).

Smeaton's blueprint differs from other Georgian-Victorian engineering projects, which often included adornments to add flavour, reflecting period design and taste. In general, lighthouses based on Smeaton's design were stripped of unnecessary décor to generate a utilitarian monotony. By contrast, the first two Eddystone lighthouses devised by Henry Winstanley were octagonal wooden structures festooned with 'projections and quaint contrivances' to resemble a Chinese pagoda (Davenport Adams, 1891). The second was washed away in 1703, after barely five years of operation. John Rudyard's replacement combined timber and masonry and operated from 1709, before burning down in 1755. The huge costs involved in constructing buildings in such perilous locations required structures that were made to last. In the words of Smeaton:

> You cannot fool the elements; you cannot play games with the sea – nor, indeed, with the ferocious force of water trying to find the tranquility of its own level in any place. When dealing with realities that can kill you have to build 'em right.

Ultimately, Smeaton's lighthouse endured: 'the house stood for over 120 years, before the rock itself gave way, so firm and functional was its design' (De Mare, 1973: 45). Smeaton's maritime engineering earned him the title 'the father of civil engineering' (Guichard and Trethewey, 2002). He influenced construction throughout the British Isles and the Colonies, including work by the great engineering families. Lighthouses including

Robert Stevenson's Bell Rock (1811), James Walker's Bishop Rock (1858), James Douglas's Wolf Rock (1869) and William Douglas's Fastnet II (1904) all built upon and adapted Smeaton's initial design to establish the enduring iconic lighthouse.

Lighthouses as proto-modernist sculptures

Kurt Ackermann (1991) draws attention to a neglected appreciation of industrial architecture. We might celebrate the fusion of engineering and technology in the industrial classicism of Peter Behrens' AEG Turbine Factory (1909); the art-deco stylings of the Bauhaus; or the constructivist symbolism of Soviet factory design. But Ackerman discusses more prosaic industrial structures: chimneys, cooling towers, incinerators, electricity pylons, and radio masts. The function of these structures is immediately apparent, and absolutely determines their design. For Ackerman, these structures possess *constructive intelligence*: they simply have to be the shape they are to withstand the forces of gravity and nature. At the same time, they eschew economically unnecessary adornments that might also compromise their structural integrity.

Thus the pylon or the chimney is a raw form of architecture: a building stripped to its abstract core, composed of bold geometries and shapes. They could be sculptures by accident. While the lighthouse is perhaps 'the most obvious of many functional buildings' (Piper, 1938), it is rarely acknowledged as part of the modernist industrial landscape. This is surprising until we consider that, prior to the construction of 20th century steel-framed skyscrapers, the world's great lighthouses were the tallest roofed structures ever constructed. The Corduan lighthouse in France (1611) reached a lofty 223 feet, not quite surpassing the 250-foot Lanterna in Genoa. These structures, however, retain period architectural flourishes, including tiling and wood panelling, which places them firmly in a pre-modern realm, while Rayner Banham (1960: 131), in discussing Sant Elia's sketches, draws parallels between early 20th-century Futurism and lighthouse design:

> Their shapes are bare and smooth, rectangular or semi-circular in plan, often battered back in section to give a tapering silhouette, their vertical emphasis uninterrupted by string-courses and cornices, but reinforced by boldly marked vertical arrises (sic).

The clarity, simplicity and harmony of Smeaton's iconic design also resonates with the minimalist vocabulary identified by Robert Venturi and colleagues (1972) and associated

with early 20th-century modernist architects such as Mies van der Rohe. Accordingly, the proto-modernist qualities of Smeaton's lighthouse should be considered alongside the architecture of the Industrial Revolution, as an iconic structure that helped to define a new age.

Perhaps the ultimate expression of Smeaton's lighthouse design – as described by Steve Hoon above (see Fig??) – is Vladimir Shukhov's Adziogol (1911), located on the Dneiper River in the Ukraine. While retaining the iconic circular base and tapering tower, the structure not only does away with décor or colour, but also with the stonework and interior space. What is left is an abstraction of a lighthouse: a parabolic steel frame supporting a thin tubular post fixed to a simple circular concrete pad. The keeper resides in a cottage at the base of the structure. This fusion of Smeaton and Soviet Constructivism firmly locates this lighthouse design within 20th-century Modernism.

[FIGURE?? HVALNES OR DUNGENESS]

Post-war lighthouse design has produced even starker brutalist structures. Hvalnes (1954), constructed in Iceland, is a simple square cylindrical concrete block, and Phillip Hunt's fully-automated Dungeness (1961) is a minimalist tube-like structure, with no taper, constructed by stacking pre-cast, pre-stressed concrete rings.

The descent of lighthouse into nautical gaiety

Commissioned by John Betjeman in the 1930s, the *Shell Guides to Britain*, containing the paintings of John Piper, Peggy Richard and Paul Nash, endeavoured to capture Britain's recent-modernist landscape. They developed the notion of the *modern picturesque*, an appreciation of 20th-century landscapes which contrasts with 19th-century conventions regarding good planning and visual design. Britain's coastline communities are portrayed in Piper's *The Nautical Style* (1938) through a celebration of 'nautical gaiety', a notion developed by Eric de Mare's (1973) examination of coastal architecture in identifying a *functional tradition* within *sea-coast building*, foregrounding what he calls *the Sailor's taste.* This is a Britain of bright regatta flags, striped signal masts and colourful dots, producing a colour symbolism that denotes gaiety through *unadorned functionalism*.

Crucially, from this point onwards, the iconic lighthouse form seems to slip into a landscape that is quaint, romantic or even gothic, associated with a nostalgic vision of

Britain's maritime heritage that usurps the position of the lighthouse as an important site of innovation in visual technology and engineering experimentation (Otter, 2008). Despite maintaining a practical function, lighthouses, with their colourful black and white or red stripes, pass into a national design idiom that reproduces a notion of nautical gaiety, and qualities of sturdiness, strength and longevity become linked with visions of romance and beauty.

De Mare (1973) captures the ambivalence of this cultural representation, which combines aesthetics and utility, modernism and nostalgia:

> It's very unusual to see an ugly lighthouse. Unlike other buildings of a purely utilitarian nature, lighthouses are often located in places having a rugged beauty and this makes us think of them as picturesque even though they are not trying to be beautiful. Lighthouses are where they are because they need to be where they are.

Thus, by the mid-20th century, the lighthouse has passed far into the realm of nautical nostalgia, obscuring how, as sites of technological and engineering innovation since the late 18th century, they sit with mills and factories as defining symbols of the Industrial Revolution.

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